

are illustrated in the accompanying drawings and described below. While the invention(s) will be described in conjunction with exemplary embodiments, it will be understood that the present description is not intended to limit the invention(s) to those exemplary embodiments. On the contrary, the invention(s) is/are intended to cover not only the exemplary embodiments, but also various alternatives, modifications, equivalents and other embodiments, which may be included within the spirit and scope of the invention as defined by the appended claims.

[0027] An exemplary embodiment of the present invention will hereinafter be described in detail with reference to the accompanying drawings.

[0028] FIG. 1 is a perspective view of a transmission housing of a CVT provided with a supporting unit according to an exemplary embodiment of the present invention, FIG. 2 is a top plan view showing connecting relationship of a CVT and an oil pump according to an exemplary embodiment of the present invention, and FIG. 3 is a perspective view of a supporting unit according to an exemplary embodiment of the present invention.

[0029] As shown in FIG. 1, a transmission housing 40 of a CVT according to an exemplary embodiment of the present invention includes a CVT 20, an oil pump 30 and a supporting unit 10 therewithin.

[0030] The CVT 20 may be any CVT and includes an input shaft 22 and a CVT case cover 24.

[0031] The oil pump 30 may be any oil pump and includes a rotating shaft 32 and an oil pump case cover 34. The oil pump may be an external gear pump or an internal gear pump gear pump.

[0032] The CVT input shaft 22 and the oil pump rotating shaft 32 are connected by an appropriate connecting member and mutually operated. Due to mutual operation, torque of the input shaft 22 is transmitted to the oil pump rotating shaft 32 for operating the oil pump 30. The appropriate connecting member may be a belt or a chain.

[0033] The supporting unit 10 is disposed between the CVT 20 and the oil pump 30. An end of the supporting unit 10 is connected to the CVT case cover 24 and another end of the supporting unit 10 is connected to the oil pump case cover 34.

[0034] As shown in FIG. 1 and FIG. 3, if connecting surfaces of the CVT case cover 24 and the oil pump case cover 34, connected to the supporting unit 10, are not on the same level, a stepped surface 16 may be formed to the supporting unit 10 for connecting the supporting unit 10. The stepped surface 16 may be a plate shape or a curved surface.

[0035] While the supporting unit 10 is connected to the CVT case cover 24 and the oil pump case cover 34 in FIG. 1, however it is not limited as shown. On the contrary, any fixed constituent elements (e.g., transmission case and oil pump case), which do not prevent operation of the CVT 20 and the oil pump 30 may be used for connecting the supporting unit 10. Merely, one end of the supporting unit 10 is connected to the CVT 20 and another end of the supporting unit 10 is connected to the oil pump 30 for preventing movement or oscillation due to mutual operation of the CVT 20 and the oil pump 30.

[0036] As shown in FIG. 2, the CVT 20 and the oil pump 30 according to the exemplary embodiment of the present invention includes a first sprocket 26 and a second sprocket 36 respectively.

[0037] The first sprocket 26 is rotatable around the CVT input shaft 22.

[0038] The second sprocket 36 is rotatable around the oil pump rotating shaft 32.

[0039] The first sprocket 26 and the second sprocket 36 are connected by a chain 50 and so on, and rotate. That is, the first sprocket 26 integrally rotates with the CVT input shaft 22 and the second sprocket 36 rotating with the oil pump rotating shaft 32 receives torque from the first sprocket 26 via the chain 50 to operate the oil pump 30.

[0040] The connecting relationship between the sprocket 26 and 36 and the chain 50 may be replaced by a pulley and a belt and so on.

[0041] Meanwhile, when the CVT input shaft 22 rotates at a high speed, the chain 50 may generate vibration and noise. Also, the CVT input shaft 22 and the oil pump rotating shaft 32 may move or oscillate.

[0042] As described above, the supporting unit 10 may minimize noise and vibration due to movement of a chain or a belt.

[0043] As described in the FIG. 1, the supporting unit 10 is connected to the CVT case cover 24 and the oil pump case cover 34.

[0044] A connecting member is applied for that connection, the connecting member may be a connecting bolt 60 used for assembling a case of the CVT 20 and assembling a case of the oil pump 30.

[0045] In the FIG. 2, it is shown that the connecting bolt 60 used for connecting a case 21 of the CVT 20 with the CVT case cover 24, and the connecting bolt 60 used for connecting the oil pump 30 with the oil pump case cover 34 are used for connecting the supporting unit 10.

[0046] As shown in FIG. 3, the supporting unit 10 according to an exemplary embodiment of the present invention includes a connecting hole 12, a hole 14 for preventing crack and a stepped surface 16.

[0047] The supporting unit 10 is formed as a plate shape for easily connecting in limited space of the transmission housing. Also, the plate shape may minimize interference with constituent elements such as the chain 50. The supporting unit 10 may be formed as metal material or resin for securing rigidity.

[0048] The connecting hole 12 is formed to the supporting unit 10 as plural. Also, the connecting hole 12, as shown in FIG. 2, is used for connecting with the connecting bolt 60.

[0049] Positions of the connecting holes 12 are determined for assembling the case of the CVT 20 and assembling of the case of the oil pump 30, and thus separate elements for connecting are not required.

[0050] Shape of the supporting unit 10 may be determined according to shapes of the CVT case cover 24 and the oil pump case cover 34.

[0051] That is, various shape of the supporting unit 10 may be selected for preventing interference with other constituent elements.

[0052] The hole 14 for preventing crack is formed to prevent the supporting unit 10 from cracking. Since the supporting unit 10 is formed as a hollow plate where the hole 14 for preventing crack is formed thereto, and thus the supporting unit 10 may not be cracked due to operations of the CVT input shaft 22 and oil pump rotating shaft 32. Also, the hole 14 for preventing crack may reduce weight of the supporting unit 10.

[0053] The stepped surface is formed for connecting the CVT case cover and the oil pump case cover which form connecting surfaces that are not on the same level.